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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/764,841

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EXAMINER

SEVERSON, RYAN J

ART UNIT

PAPER NUMBER

3731

MAIL DATE

DELIVERY MODE

05/15/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/764,841	Applicant(s) BOYLAN ET AL.	
	Examiner Ryan Severson	Art Unit 3731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2007.
- 2a) ☒ This action is FINAL.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 15-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 15-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. This office action is in response to the amendment filed 20 February 2007.

#### ***Drawings***

2. The drawings were received on 20 February 2007. These drawings are accepted. The objections to the drawings have therefore been withdrawn.

#### ***Specification***

3. The corrections to the specification are accepted and the objections withdrawn.

#### ***Claim Rejections - 35 USC § 103***

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1, 2, 4, 6, and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsugita et al. (5,910,154) in view of Mitose et al. (5,885,381).**

Tsugita et al. (hereinafter Tsugita) reference discloses the invention substantially as claimed, including a self-expanding strut assembly (54) including a superelastic alloy (see column 8, lines 48-50) and a filter element (60) disposed on the strut assembly (see figures 6A and 6B). However, Tsugita reference does not disclose the superelastic alloy includes a ternary element. Attention is drawn to Mitose et al. (hereinafter Mitose) reference, which teaches a superelastic alloy can have a ternary element to reduce the stress hysteresis and improve hot workability in the device (see column 3, lines 51-56) as compared to a simple nickel titanium alloy without a ternary element (compare graphs in figures 2 and 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the nickel-titanium strut assembly of Tsugita reference with the alloy of Mitose having a ternary element (palladium) to reduce the stress hysteresis and improve hot workability in the device.

7. Further regarding claim 1, it can be seen in figure 2 that the loading plateau of an alloy without the ternary element is approximately 375 Mpa and in figure 4 it can be seen that the loading plateau of an alloy with the ternary element is approximately 300 Mpa. The hysteresis is much lower in the alloy with the ternary element than the alloy without, which is the entire teaching and purpose of Mitose reference (see column 3, lines 20-31).

8. Regarding claim 2, the system of Tsugita reference discloses a sheath at least partially covers the filter element when it is in it's collapsed configuration (see column 12, lines 28-30).

9. Regarding claim 4, the strut assembly of Tsugita reference has a conical shape with a first base and the filter has a conical shape with a second base, and the bases are joined (see figure 6A at ref. numeral 58, or see figure 6B at ref. numeral 56). The bases are interpreted to be the tips of the strut assembly and the filter.

10. Regarding claims 6, 16, and 17, the alloy of Mitose is preferably 5 to 9% ternary element (palladium), 50% titanium, and 41 to 45% nickel (see column 3, lines 51-56). By this composition, when looking in table 1, the transformation temperature ( $A_f$ ) is 25°C, which is less than human body temperature and also less than 45°C.

11. Regarding claim 15, the alloy of Mitose is a shape memory or superelastic alloy.

12. Regarding claims 18 and 19, the ternary element is palladium.

13. Regarding claim 20, Tsugita in view of Mitose discloses the self-expanding strut assembly with a filter element and superelastic alloy with 50 percent titanium, 41 to 45% nickel, and 5 to 9% palladium (see paragraphs 6, 7, and 10 above).

14. **Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsugita et al. (5,910,154) in view of Mitose et al. (5,885,381) as applied to claims 1 and 2 above, and further in view of Clark et al. (5,713,853).** The combination of Tsugita with Mitose does not disclose that the assembly is cut from a tube with truncated diamond shape openings. Attention is drawn to Clark et al. reference, which teaches a shaft can be cut with a laser (see column 11, lines 25-26) to

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form the desired structure with accuracy. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to shape the strut members with the diamond shape pattern, as disclosed by Tsugita reference and shown in figures 6A-6B, by laser cutting, as taught by Clark et al. reference, to form the desired structure with accuracy.

### ***Response to Arguments***

15. Applicant's arguments filed 20 February 2007 have been fully considered but they are not persuasive. Applicant has argued that the combination of Tsugita with Adams in the previous office action would not have been obvious to one of ordinary skill in the art. Examiner respectfully disagrees. The use of superelastic alloys in the medical arts is well known. One of ordinary skill in the art would indeed have looked to other references such as Adams (in the previous office action) or Mitose (in the present action) to find compositions of superelastic alloys that would exhibit more desirable physical properties, namely reduced hysteresis in the present case. Further, applicant has recognized references such as Abrams et al. (5,637,089) as being pertinent prior art because applicant submitted such reference in the IDS filed 26 January 2004. As applicant has shown, the reference is pertinent and the applicant did look to this reference, and therefore one of ordinary skill in the art also would indeed have known to look at similar references.

***Conclusion***

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

17. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Severson whose telephone number is (571) 272-3142. The examiner can normally be reached on Monday - Friday 9:00 - 5:30.

19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anhtuan Nguyen can be reached on (571) 272-4963. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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20. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ryan Severson  
May 4, 2007



ANH TUAN T. NGUYEN  
SUPERVISORY PATENT EXAMINER

5/12/07